699-46-79 (A8739)
Log Data Report

Borehole Information:

Borehole:	699-46-79 (A8739)		Site:	218-W-5 Burial Ground	
Coordinates (WA St Plane)		GWL[1] (ft):	None	GWL Date:	03/13/07
North (m)	East (m)	Drill Date	TOC Elevation	Total Depth (ft)	Type
Not available	Not available	03/80	Not available	40	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded Steel	2.9	6 5/8	6 1/8	1/4	2.9	40

Borehole Notes:

Casing diameter and stickup measurements were acquired using a caliper and steel tape. Measurements are rounded to the nearest 1/16 inch. Logging data acquisition is referenced to the top of casing (TOC).

The driller's log reports grout around the 6-in. casing to 20 ft and a grout plug at the bottom of the borehole.

Logging Equipment Information:

Logging System:	Gamma 4E		Type:	SGLS (70%) SN: 34-TP40587A
Effective Calibration Date:	05/08/06	Calibration Reference:	DOE-EM/GJ1199-2006	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 4H		Type:	Neutron Moisture SN: H310700352
Effective Calibration Date:	11/22/06	Calibration Reference:	HGLP-CC-02	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat			
Date	03/13/07	03/13/07			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	120.0	13.0			
Finish Depth (ft)	3.0	3.0			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N/A	N/A			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A	N/A			
Pre-Verification	DEF41CAB	DEF41CAB			
Start File	DEF41000	DEF41038			
Finish File	DEF41037	DEF41048			
Post-Verification	DEF41CAA	DEF41CAA			
Depth Return Error (in.)	0	0			
Comments	No fine gain adjustment	No fine gain adjustment			

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	3	4 Repeat			
Date	03/13/07	03/13/07			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	40.0	27.0			
Finish Depth (ft)	3.0	17.0			
Count Time (sec)	15	15			
Live/Real	R	R			
Shield (Y/N)	N	N			
Sample Interval (ft)	0.25	0.25			
ft/min	N/A	N/A			
Pre-Verification	DH442CAB	DH442CAB			
Start File	DH442000	DH442149			
Finish File	DH442148	DH442189			
Post-Verification	DH442CAA	DH442CAA			
Depth Return Error (in.)	0	0			
Comments	None	None			

Logging Operation Notes:

Logging was performed in this borehole with the SGLS and NMLS. Logging was conducted with a centralizer on the sondes. Measurements are referenced to the TOC. Repeat sections were collected in this borehole to evaluate the logging systems' performance.

Analysis Notes:

Analyst:	Henwood	Date:	03/14/07	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after data acquisition. Acceptance criteria were met for all systems.

A casing correction for 0.25-in-thick casing was applied to the spectral log data (SGLS). The neutron moisture logging data were corrected for a 6-in. casing to volumetric moisture.

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G4EMay06.xls for the SGLS.

Results and Interpretations:

Cs-137 was detected at 29 ft using the routine processing software. This detection was determined to be a statistical fluctuation.

Neutron measurements indicate some variability. Enhanced moisture is indicated at approximately 4 and 22 ft. Grout was observed at the ground surface by the logging engineer and the higher moisture at 4 ft (approximately 1 ft below ground surface after casing stickup is subtracted) may be related to the grout. The moisture at 22 ft appears to show true moisture content of the sediments rather than grout because the total gamma shows less count rate that could reflect attenuation of gamma rays by the high moisture. It appears from the KUT and moisture data that the grout reported to exist from the ground surface to 20 ft in the driller's log does not exist continuously in this interval.

The repeat sections for the SGLS and NMLS indicate good agreement for the naturally occurring, radionuclides, and moisture.

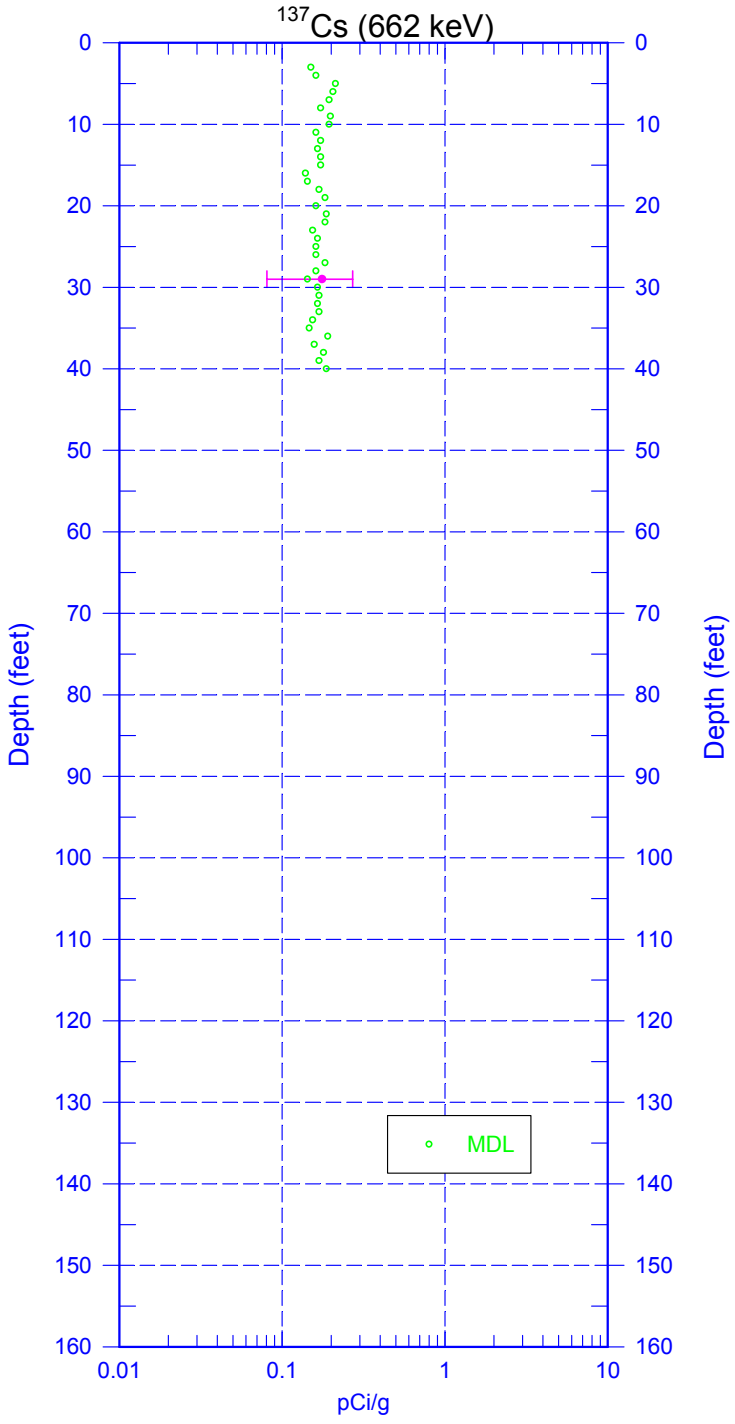
List of Log Plots:

Depth Reference is top of casing
Depth Scale - 20 ft/inch except for repeat logs

Manmade Radionuclides
Natural Gamma Logs
Combination Plot
Total Gamma, Moisture, & Dead Time
Repeat Section of Natural Gamma Logs
Repeat of Moisture

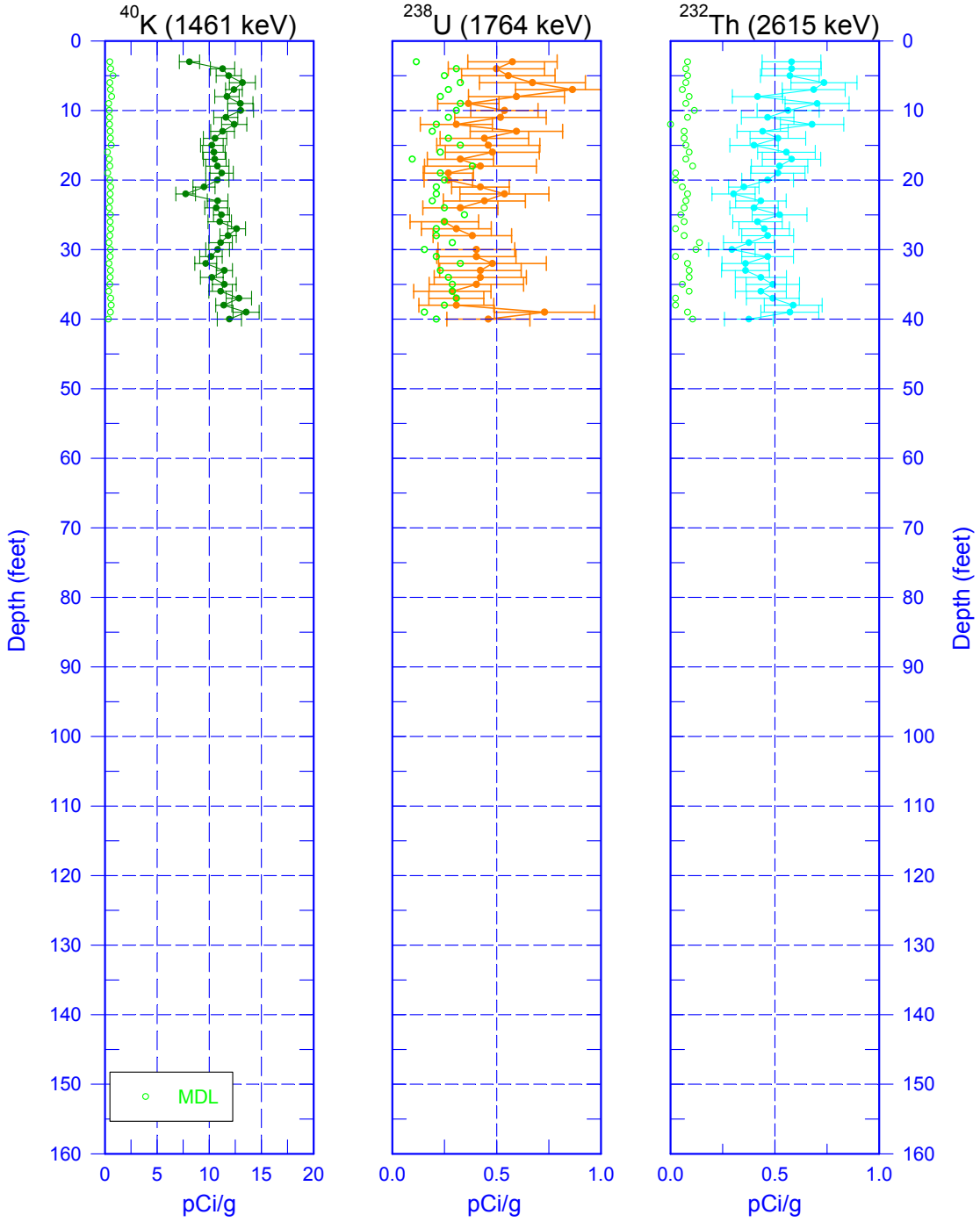
[1] GWL – groundwater level

699-46-79 (A8739)
Manmade Radionuclides



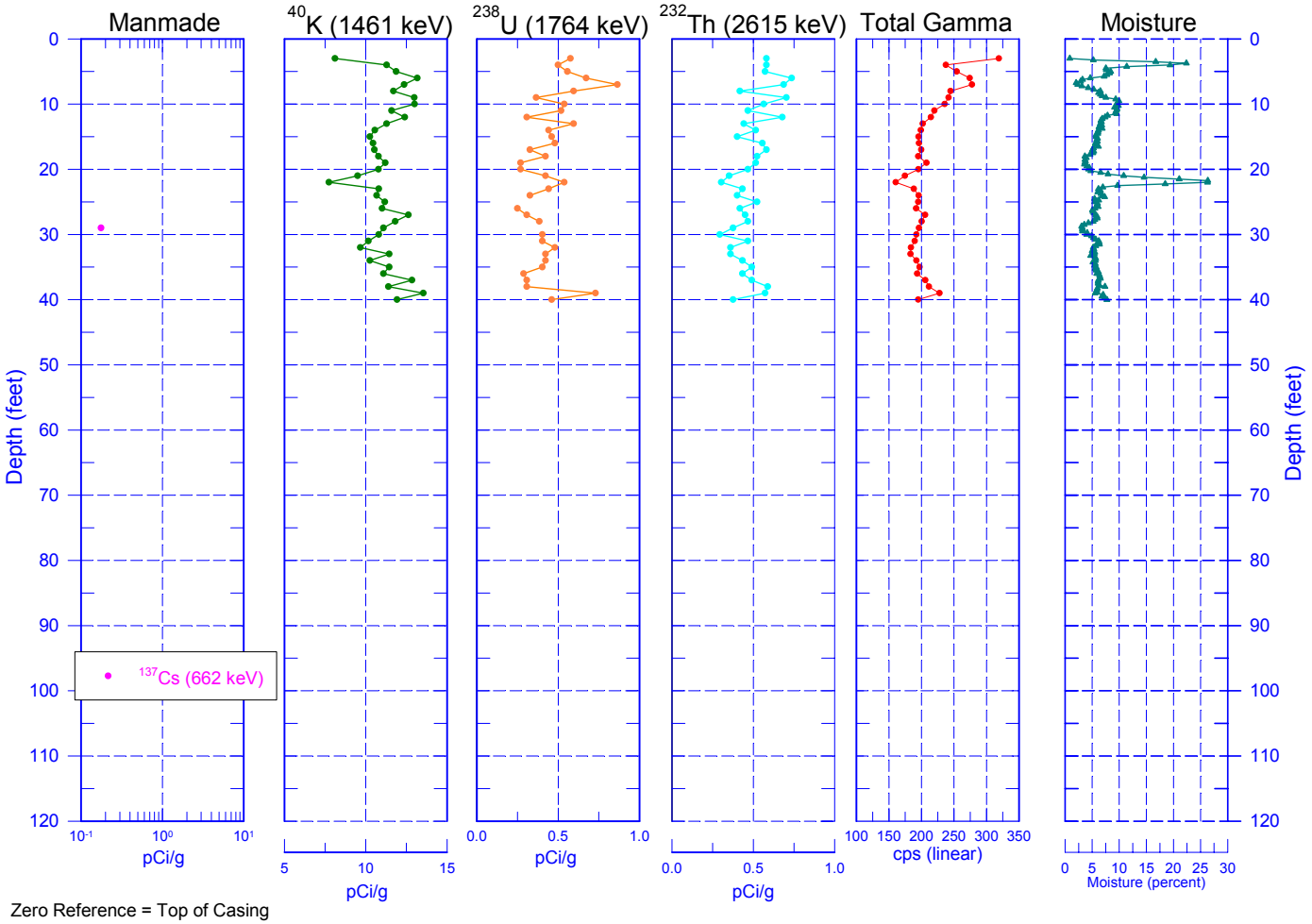
Reference - Top of Casing

699-46-79 (A8739)
Natural Gamma Logs



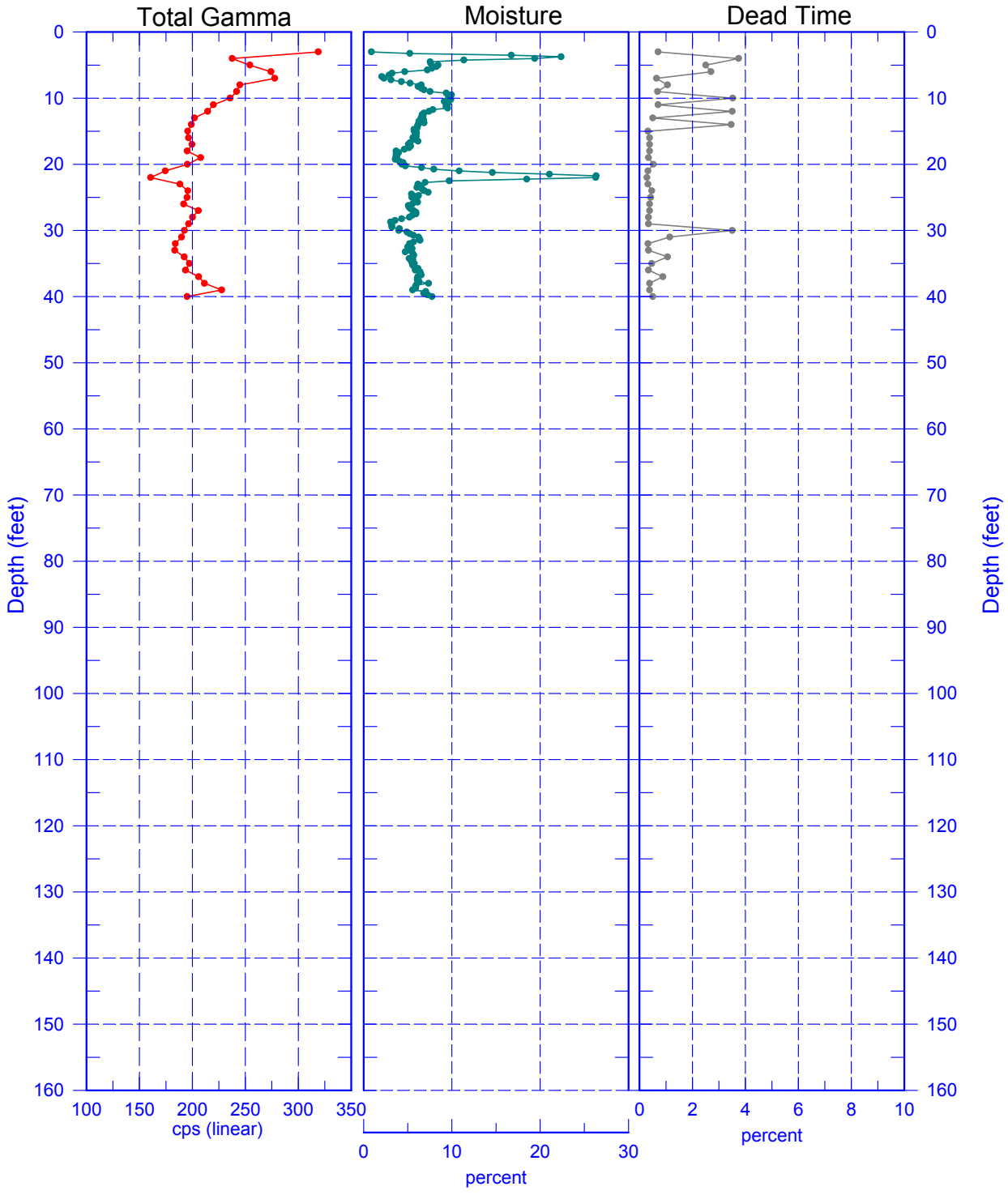
Zero Reference = Top of Casing

699-46-79 (A8739) Combination Plot



Zero Reference = Top of Casing

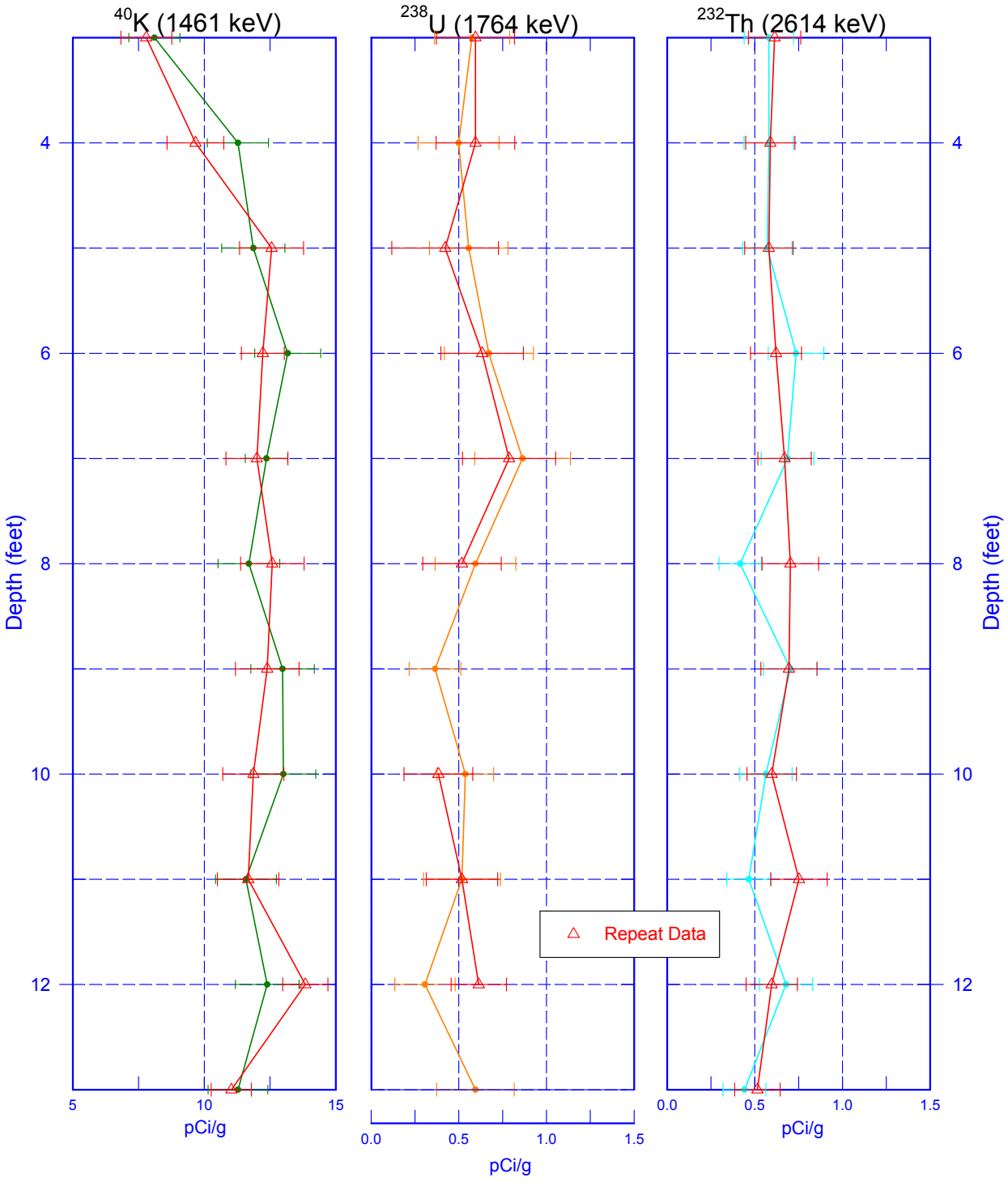
699-46-79 (A8739)
Total Gamma, Moisture, & Dead Time



Reference - Top of Casing

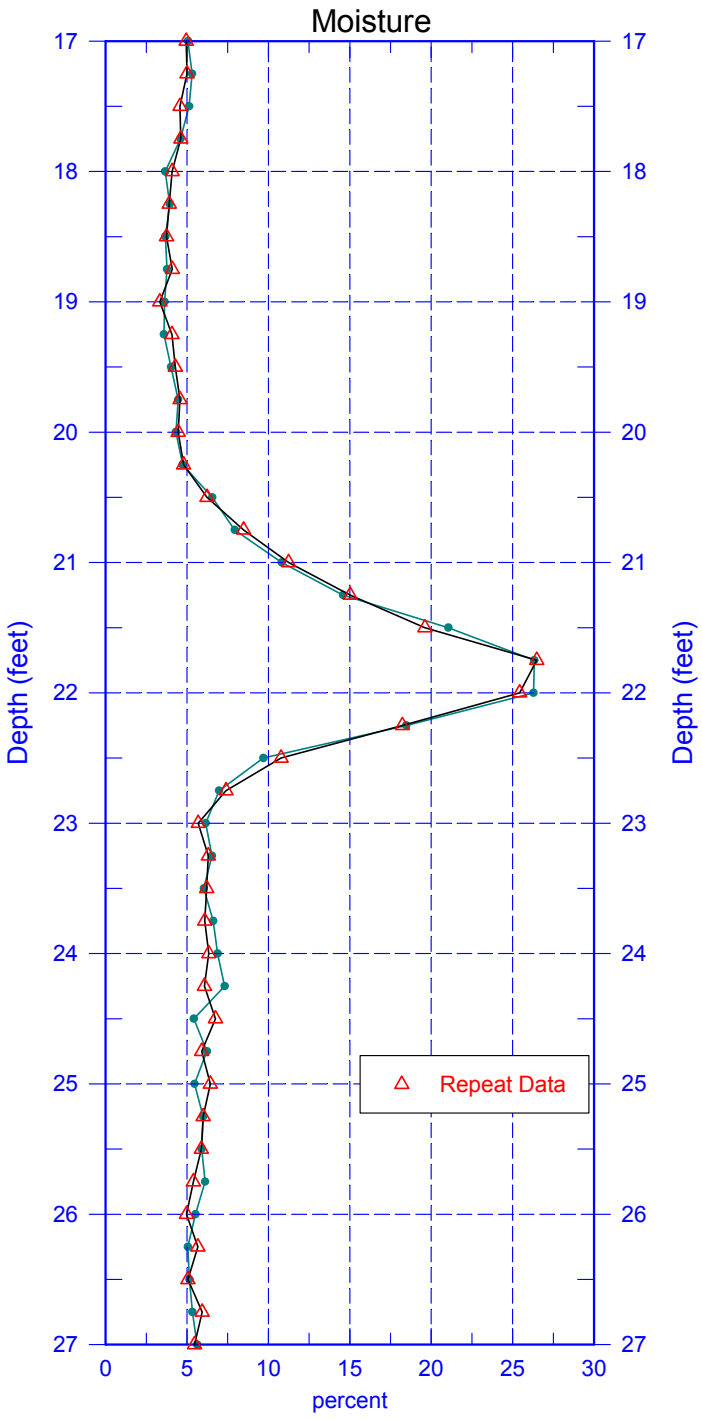
699-46-79 (A8739)

Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing

699-46-79 (A8739)
Repeat of Moisture



Reference - Top of Casing